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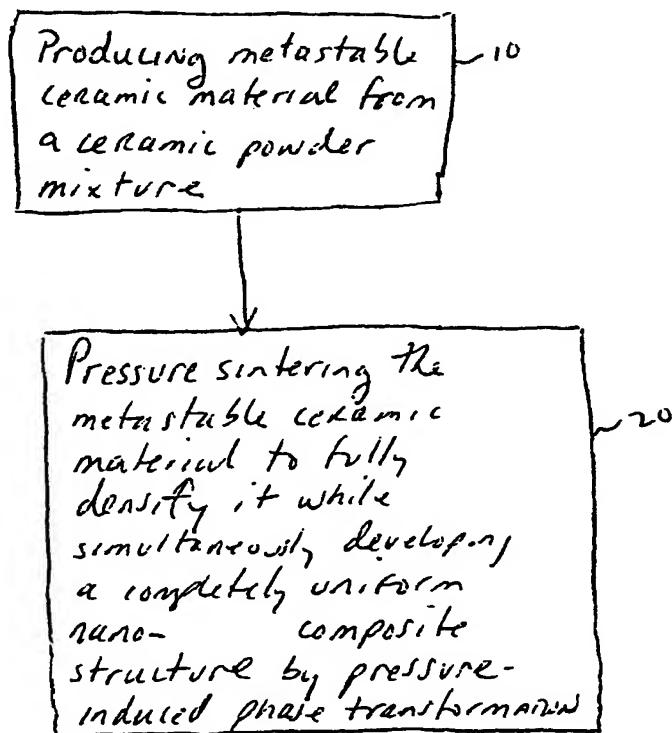
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(54) Title: COMPOSITE CERAMIC HAVING NANO-SCALE GRAIN DIMENSIONS AND METHOD FOR MANUFACTURING SAME

(57) Abstract: A composite ceramic including a first phase of ceramic material and a second phase of ceramic material, the first and second phases forming three dimensional interconnected networks of each phase and having a nano-scaled grain size. The composite ceramic is produced in a method which utilizes rapid solidification at cooling rates of at least $\sim 10^4$ K/sec to produce a metastable material formed by a solid solution of a two immiscible ceramic material phases, and which also utilizes relatively high pressure/low temperature consolidation to complete densification of the metastable material, while simultaneously generating a composite structure with nano-scale grain dimensions through a controlled phase transformation.



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